

**REMARKS**

Attached hereto is a marked up version of the changes made to the claims by this amendment. The attachment is captioned "**Version With Markings to Show Changes Made.**"

In response to the objections raised by the Examiner in the April 10, 2001 Office Action, our comments follow. Reconsideration and withdrawal of the rejections of the application are respectfully requested in view of the amendments and remarks herewith, which place the application into condition for allowance.

**I. STATUS OF CLAIMS AND FORMAL MATTERS**

Claims 1 and 8 have been amended; Claims 1, 9-21 and 29-31 are now pending. No new matter is added by these amendments.

It is submitted that the claims, herewith and as originally presented, are patentably distinct over the prior art cited by the Examiner, and that these claims were in full compliance with the requirements of 35 U.S.C. §112. The amendments of and additions to the claims, as presented herein, are not made for purposes of patentability within the meaning of 35 U.S.C. §§§ 101, 102, 103 or 112. Rather, these amendments and additions are made simply for clarification and to round out the scope of protection to which Applicants are entitled. Support is found throughout the specification and from the pending claims.

**II. THE REJECTION UNDER 35 USC §112, FIRST PARAGRAPH, IS OVERCOME**

Claim 1 stands rejected under 35 U.S.C. §112, first paragraph, as allegedly containing subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s) had possession of the claimed invention. The Office Action contends that the specification and claim do not indicate what distinguishing attributes are shared by the members of the genus. Moreover, the Office Action maintains that the disclosure fails to describe the common attributes or characteristics that identify members of the genus, and fails to provide a representative number of species to describe the genus. The rejection is traversed.

It is respectfully submitted that the terms used in Claim 1 to describe the characteristics of the claimed chaperone polypeptides are described throughout the specification. In particular,

the term "chaperone polypeptide" is described on page 8, lines 18-21. "Chaperone activity" is described on page 8, lines 23-28. "Substantially homologous" is defined on the text bridging page 14, line 27 to page 15, line 3. "Modifications" are described on page 14, lines 24-25.

The Examiner asserts that because the genus is highly variant, the amino acid sequence shown in Figure 7 is insufficient to describe the genus. The Examiner will note that a non-exhaustive list of more than 120 members of the hsp60 class of chaperonin proteins, of which GroEL is a member, with substantially homologous apical domains are presented in the text bridging page 15, line 18 to page 22, line 19 and in Figures 9a-c of the present application.

In view of the definitions presented in the present application for the terms, modifications, variants and mutations, we also submit that a person skilled in the art would be able to identify modifications, variants and mutations of the amino acid sequence shown in Figure 7.

Furthermore, if these terms were not included in Claim 1, it would be straightforward for a person skilled in the art to utilize the teachings presented in the present application and work around the claims. Using routine methods, the skilled person could prepare a mutant, variant or modification of the amino acid sequence presented in Figure 7 that retains chaperone activity but is not covered by Claim 1.

Thus, it is respectfully submitted that the assertion in the Office Action that Claim 1 contains subject matter not adequately described in the specification is obviated. Consequently, the Section 112, first paragraph, rejection should be reconsidered and withdrawn; such relief is respectfully requested.

### **III. THE REJECTION UNDER §112, SECOND PARAGRAPH, IS OVERCOME**

Claims 1, 8-11, 14-21 and 29-31 stand rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. The term "substantially" has been deleted from Claim 1. The terms "preferably" and "even more preferably" have been deleted from Claim 8. With reference to the terms "substantially homologous" and "modified, mutant or variant", the Examiner should please refer to the passages of text cited above. Consequently, reconsideration and withdrawal of the rejection is believed to be in order and such action is respectfully requested.

It should be noted that although Claim 8 was withdrawn from consideration by the Examiner, it was rejected under 35 U.S.C. §112, second paragraph in the Office Action. In addition, Claim 13 remains under consideration and depends on Claim 8. It is respectfully

submitted that the removal of Claim 8 from consideration was an error and an official rejoinder is respectfully requested. (For Claim 8 to have been rejected, it was indeed considered on the merits and rejoined unofficially.)

**IV. THE REJECTION UNDER §102 IS OVERCOME**

Claims 1 and 9-17 stand rejected under 35 U.S.C. §102(b) as allegedly anticipated by Braig et al. This rejection is respectfully traversed.

Applicants' invention is directed to, *inter alia*, chaperone polypeptides that are active in the folding and maintenance of structural integrity of other proteins. Although Braig *et al.* discloses the amino acid sequence of *E. coli* GroEL, the citation does not teach fragments of GroEL that have chaperone activity as described on page 7, lines 9 to 24 of the present application.

It is respectfully pointed out that a two-prong inquiry must be satisfied in order for a Section 102 rejection to stand. First, the prior art reference must contain all of the elements of the claimed invention. *See Lewmar Marine Inc. v. Bariant Inc.*, 3 U.S.P.Q.2d 1766 (Fed. Cir. 1987). Second, the prior art must contain an enabling disclosure. *See Chester v. Miller*, 15 U.S.P.Q.2d 1333, 1336 (Fed. Cir. 1990). A reference contains an enabling disclosure if a person of ordinary skill in the art could have combined the description of the invention in the prior art reference with his own knowledge of the art to have placed himself in possession of the invention. *See In re Donohue*, 226, U.S.P.Q. 619, 621 (Fed. Cir. 1985).

Applying the law to the instant facts, the reference relied upon by the Office Action does not disclose, suggest or enable Applicants' invention. Firstly, Braig et al. does not contain all of the elements of the instant claims. For example, Braig et al. does not teach a recombinant *E. coli* GroEL fusion polypeptide. Therefore, the cited reference does not read on the instant claims.

Secondly, Braig et al. does not enable Applicants' invention, which provides for, *inter alia*, the use of a GroEL polypeptide for the treatment of disease. For these reasons, reconsideration and withdrawal of the Section 102 rejection is believed to be in order and such action is respectfully requested.

**V. THE REJECTION UNDER §103 IS OVERCOME**

Claims 1, 18-21 and 29-31 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Braig et al., in view of Holland et al. It is not admitted that a person skilled in

the art may have been motivated to make a recombinant *E. coli* GroEL fusion polypeptide in view of these citations, as the Examiner alleges, especially as these citations actually teach away from the present invention. Braig *et al.* and Holland *et al.* do not teach or suggest fragments of *E. coli* GroEL polypeptides that have chaperone activity as described on page 7, lines 9 to 24 of the present application and as in the claims.

Accordingly, Claims 1, 18-21 and 29-31 do not lack inventive step. Reconsideration and withdrawal of the Section 103 rejection is believed to be in order and such action is respectfully requested.

**REQUEST FOR INTERVIEW WITH SUPERVISORY REVIEW**

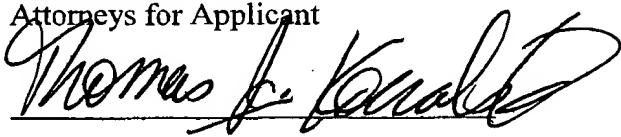
If any issue remains as an impediment to allowance, an interview is respectfully requested prior to issuance of any paper other than a Notice of Allowance; and, the Examiner is respectfully requested to contact the undersigned to arrange a mutually convenient time and manner therefor.

**CONCLUSION**

In view of the remarks and amendments herewith, the application is believed to be in condition for allowance. Favorable reconsideration of the application and prompt issuance of a Notice of Allowance are earnestly solicited. The undersigned looks forward to hearing favorably from the Examiner at an early date.

Respectfully submitted,

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IN THE CLAIMS

1. A chaperone polypeptide having an amino acid sequence selected from at least amino acid residues 230-271 but no more than residues 150-455 or 151-456 of a GroEL sequence [substantially] as shown in Figure 7, or a corresponding sequence of a substantially homologous chaperone polypeptide, or a modified, mutated or variant sequence thereof having chaperone activity.
8. Monomeric polypeptide having chaperone activity and incapable of multimerisation characterised in that in the absence of ATP the polypeptide has a protein refolding activity of more than 50%, [preferably 60%, even more preferably 75%,] said refolding activity being determined by contacting the polypeptide with an inactivated protein of known specific activity prior to inactivation, and then determining the specific activity of the said protein after contact with the polypeptide, the % refolding activity being:

$$\frac{\text{specific activity of protein after contact with polypeptide} \times 100}{\text{specific activity of protein prior to inactivation}} \quad 1$$